Patent claims

1. - 17. (canceled)

18. (new) A method for determining stress of at least one turbine component of a plurality of turbine components of a turbine machine, executed by a device for determining the stress,

the turbine component chosen from the group consisting of a turbine bla de and a guide vane,

the plurality of turbine components arranged in component rows,

the device comprising:

at least one electromagnetic wave emitter for emitting at least one electromagnetic emission wave;

at least one electromagnetic wave receiver for receiving at least one electromagnetic receive wave; and

at least one analyzer for analyzing the electromagnetic receive wave,

the turbine component comprising a reflection surface for converting the electromagnetic emission wave into the electromagnetic receive wave by at least partially reflecting the electromagnetic emission wave, and

the electromagnetic wave emitter and the electromagnetic wave receiver arranged at at least one location between the component rows and operatively connected to the reflection surface of the turbine component,

the method comprising:

emitting the electromagnetic emission wave by the electromagnetic wave emitter;

converting the electromagnetic emission wave into the electromagnetic receive wave by the reflection surface of the component;

receiving the electromagnetic receive wave by the electromagnetic wave receiver; and

determining the stress of the component by analyzing the received electromagnetic receive wave by the analyzer.

19. (new) The method according to claim 18, wherein the method is executed to determine the stress of both a turbine blade and a guide vane.

20. (new) The method according to claim 18, wherein analyzing the received electromagnetic wave comprises an evaluation of a surface quality of the reflection surface used for determining the stress.

21. (new) The method according to claim 20, wherein emitting the electromagnetic emission wave comprises at least one electromagnetic emission wave having a wavelength based on a shape of the reflection surface.

22. (new) The method according to claim 20, wherein the evaluation of the surface quality comprises detecting an intensity of the electromagnetic receive wave.

23. (new) The method according to claim 18, wherein analyzing the received electrom agnetic wave comprises an evaluation of a vibration status of the reflection surface used for determining the stress.

24. (new) The method according to claim 23, wherein emitting the electromagnetic emission wave comprises at least one electromagnetic emi ssion wave having a wavelength based on a surface shape of the reflection surface.

25. (new) The Method according to claim 23, wherein the evaluation of the vibration status comprises comparing a frequency of the electromagnetic emission wave and to a fre quency of the electromagnetic receive wave.

26. (new) The method according to claim 18, wherein analyzing the received electromagnetic wave comprising an evaluation of a surface quality of the reflection surface and an evaluation of a vibration status of the reflection surface, wherein the surface quality and the vibrational status are used for determining the stress.

27. (new) The method according to claim 26, wherein the evaluation of the surface quality and the evaluation of the vibrational status are executed simultaneously.

28. (new) The method according to claim 18, wherein deter mining the stress of the turbine component is executed while an operation of the turbine machine.

29. (new) The method according to claim 18, wherein the electromagnetic emission wave is a radar wave.

30. (new) A turbine machine, comprising a device for determining stress of at least one turbine component of a plurality of turbine components of the turbine machine,

the turbine component chosen from the group consisting of a turbine blade and a guide vane,

the plurality of turbine components arranged in component rows,

the device comprising:

at least one electromagnetic wave emitter for emitting at least one electromagnetic emission wave;

at least one electromagnetic wave receiver for receiving at least one electromagnetic receive wave; and

at least one analyzer for analyzing the electromagnetic receive wave,

the turbine component comprising a reflection surface for converting the electromagnetic emission wave into the electromagnetic receive wave by at least partially reflecting the electromagnetic emission wave, and

the electromagnetic wave emitter and the electromagnetic wave receiver arranged at at least one location between the component rows and operatively connected to the reflection surface of the turbine component.

31. (new) The turbine machine according to claim 30, wherein the electromagnetic wave emitter and the electromagnetic wave receiver are operatively connected to the reflection surface such that by emitting the electromagnetic emission wave converting the electromagnetic emission wave into the electromagnetic receive wave and receiving the electromagnetic receive wave occur.

32. (new) The turbine machine according to claim 30,
further comprising a housing with a turbine channel in which the component rows are arranged.

33. (new) The turbine machine according to claim 30, wherein the electromagnetic wave emitter comprises an electric vibration generator for generating an electric vibration and a transformer for transforming the electric vibration into the electromagnetic emission w ave.

34. (new) The turbine machine according to claim 30, wherein the electromagnetic wave emitter and the electromagnetic wave receiver form one integrated unit.

35. (new) The turbine machine according to claim 30, further comprising a radar antenna included in the electronic wave emitter or in the electronic wave receiver.

36. (new) The turbine machine according to claim 30, wherein the turbine machine is a gas turbine.

37. (new). Device for determining stress of at least one turbine component of a plurality of turbine components of a turbine machine,

the turbine component chosen from the group consisting of a turbine blade and a guide vane,

the plurality of turbine components arranged in component rows,

the device comprising:

at least one electromagnetic wave emitter for emitting at least one electromagnetic emission wave;

at least one electromagnetic wave receiver for receiving at least one electromagnetic receive wave; and

at least one analyzer for analyzing the electromagnetic receive wave,

the turbine component comprising a reflection surface for converting the electromagnetic emission wave into the electromagnetic receive wave by at least partially reflecting the electromagnetic emission wave, and

the electromagnetic wave emitter and the electromagnetic wave receiver sized and configured to be arranged at at least one location between the component rows and operatively connectable to the reflection surface of the turbine component.